ABSTRACT

An implantable medical device includes two or more pacing output channels coupled to a single unipolar electrode or bipolar electrode pair. The implantable medical device can control each pacing output channel to deliver pacing pulses via the single electrode or electrode pair at different times and with different amplitudes. In some embodiments, the implantable medical device is used to deliver extra-systolic stimulation therapy. In such embodiments, a first pacing output channel can be controlled to deliver pacing pulses via the electrode or electrode pair with an amplitude sufficient to depolarize a chamber of the heart. A second pacing output channel is controlled to deliver extra-systolic pulses, which can have a lower amplitude than the pacing pulses, via the electrode or electrode pair an extra-systolic interval after sensed or paced depolarizations of the chamber. In some embodiments, the implantable medical device delivers ESS therapy and cardiac resynchronization therapy (CRT).